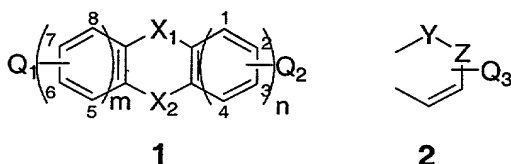


## CLAIMS

1. An infrared dye wherein the dye comprises of a molecule 1



- 5 wherein m and n are the number of fused 6-membered aromatic rings connected to each side of the central moiety such that the first 6-membered aromatic ring, if present, is connected as shown in 1; and
- wherein Q<sub>1</sub> and Q<sub>2</sub> are one of the same or different fused rings shown as 2 whereby one ring shown as 2 is connected at any of the two adjoining positions C<sub>1</sub> to C<sub>4</sub> at any orientation and another ring shown as 2 is connected to any of the two adjoining positions C<sub>5</sub> to C<sub>8</sub> at any orientation of the outer aromatic rings shown in 1 which may also include one or many substituents individually selected from the group consisting of R<sub>1</sub>, a fused 5-membered ring or a 6-membered aromatic ring optionally substituted with 1 to 4 substituents individually selected from R<sub>2</sub>, and fused polyaromatic rings optionally substituted with one or more substituents selected from R<sub>3</sub> wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are individually selected from the group R; and
- 15 wherein X<sub>1</sub> and X<sub>2</sub> are individually selected from the group consisting of CO, O, S, Se, Te, CR<sub>4</sub>R<sub>5</sub>, NR<sub>4</sub>, SiR<sub>4</sub>R<sub>5</sub>, GeR<sub>4</sub>R<sub>5</sub>, PR<sub>4</sub> where R<sub>4</sub> and R<sub>5</sub>, which may be the same or different, are selected from the group R; and
- 20 wherein Y is individually selected from the group consisting of CO, O, S, Se, Te, CR<sub>6</sub>R<sub>7</sub>, NR<sub>6</sub>, SiR<sub>6</sub>R<sub>7</sub>, GeR<sub>6</sub>R<sub>7</sub>, PR<sub>6</sub> and Z is selected from CR<sub>8</sub> or N where R<sub>6</sub>, R<sub>7</sub> and R<sub>8</sub> which may be the same or different, are selected from the group R; and
- wherein Z is individually selected from the group consisting of CO, O, S, Se, Te, CR<sub>9</sub>R<sub>10</sub>, NR<sub>9</sub>, SiR<sub>9</sub>R<sub>10</sub>, GeR<sub>9</sub>R<sub>10</sub>, PR<sub>9</sub> and Y is selected from CR<sub>11</sub> or N where R<sub>9</sub>, R<sub>10</sub> and R<sub>11</sub> which may be the same or different, are selected from the group R; and
- 25 Q<sub>3</sub> and Q<sub>4</sub> may be 0, 1 or more than 1 substituents that are individually selected from the group consisting of R<sub>12</sub>, a fused 5-membered ring or a 6-membered aromatic ring optionally substituted with 1 to 4 substituents individually selected from R<sub>13</sub>, and

fused polyaromatic rings optionally substituted with one or more substituents selected from  $R_{14}$  wherein  $R_{12}$ ,  $R_{13}$  and  $R_{14}$  are individually selected from the group R; and

- R is the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a halide atom, a hydroxy group, a substituted or unsubstituted amine group, a substituted or unsubstituted alkoxy group;

wherein the infrared dye absorbs strongly in the near infrared region of the spectrum but poorly in the visible region of the spectrum.

2. An infrared dye composition comprising a compound that can be described by molecule 1 according to claim 1.
3. A solvent-based ink composition comprising a compound that can be described by molecule 1 according to claim 1.
4. An infrared absorbing compound according to claim 1 wherein one or more polar group substituents such as  $-\text{SO}_3\text{H}$ ,  $-\text{NH}_2$  and  $-\text{CN}$  are utilized.
5. A solvent-based ink according to claim 3 which is ink jet printer ink.